

REMARKS

Claims 17, 19-20, 22-23, 31-37, 40-41, 43 and 45 are in the application. Reconsideration and withdrawal of the rejections is requested in view of the following remarks.

In this Amendment, claims 17, 20, 22, 23, 31, 34, 36, 41 and 43 have been amended, and new claim 45 has been added. Claims 21, 30, 38 and 42 have been cancelled. The independent claims, Nos. 17, 34 and 43 have been amended to more specifically describe a vapor phase cleaning step, a rinsing step and a drying step, all performed within a single processing chamber. See the Specification at 0008, 0011-0013, 0023, 0026 and 0027. By cleaning, rinsing and drying in a single chamber, the need for movement of wafers is reduced, manufacturing time requirements are reduced, and less space is needed in the clean room areas of the manufacturing facility.

Turning to the prior art, Matthews, U.S. Patent No. 5,727,578, does not disclose any vapor phase process. Rather, all process and rinse steps in Matthews are immersion steps. See Matthews at Col. 5, lines 40-45; Col. 12, lines 20-25; Col. 13, lines 60-62. In contrast, each of the claims now describes a vapor phase, rather than a liquid phase or immersion cleaning step. In addition, in Matthews, the drying step uses a layer of liquid solvent. Col. 12, lines 58-64. No solvent vapor, as now claimed, is used in the Matthews processes. Indeed, Matthews extensively teaches away from use of solvent vapor for drying, by specifically listing five reasons not to use solvent vapor, as opposed to solvent liquid, for drying. Col. 4, line 64 through

Col. 5, line 10. Moreover, in Matthews, the solvent liquid is not introduced from a location above the workpieces, as now described in claim 34. Matthews also does not disclose rotating the workpieces.

As noted at page 2 of the 11/16/2005 Office Action, the secondary references Walsh, U.S. Patent No. 3,964,957 and JP 09-06401, disclose rotation of wafers. However, the combination of Matthews with Walsh or JP 09-06401 does not render the claims obvious because none of Matthews, Walsh and JP 09-06401 suggest a vapor phase cleaning process, as claimed. Nor does the combination of Matthews, Walsh and JP 09-06401 disclose the drying step in claims 17 and 34.

DeGendt *et al.*, U.S. Patent No. 6,551,409 B1, discloses a vapor phase cleaning process using a gas phase moist ozone. Col. 5, lines 42-60. However, DeGendt *et al.* does not disclose any drying step. Drying in DeGendt *et al.* is presumably necessarily performed in a separate chamber, thus lacking a principal advantage of the claimed processes. See the specification at 0007 and 0008. DeGendt *et al.* also does not suggest rotating the workpieces or flowing fresh processing liquid into the chamber.

EP 548 596 discloses rotating the wafers. However, EP 548 596 does not suggest any vapor phase process, because the wafers are covered with a film of water during processing. Page 3, lines 36-42. EP 548 596 also expressly teaches away from the claimed heating steps. Page 3, line 34. The amended claims are accordingly not obvious over DeGendt *et al.* and EP 548 596.

In view of the foregoing, it is submitted that the claims are in condition for allowance. A Notice of Allowance is requested.

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